



Enhancing cost estimation performance through effective organizational control: the moderating role of project complexity in construction projects

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ABSTRACT

Accurate cost estimation is important for the success of any project, particularly in complex industries like construction. However, many organizations fail to recognize the importance of good cost estimation performance. Previous research has identified various factors that impact cost estimation performance, with most under organizational controls, including input, behaviour, and output controls. Despite this, the causal relationships between these controls and cost estimation performance have not been thoroughly explored, especially from the perspective of diverse project complexities. To address this gap, this paper aimed to evaluate the effect of organizational controls on cost estimation performance, including the moderating effect of project complexity. Data were collected from 152 respondents in Malaysian construction firms, and a Partial Least Squares Structural Equation Modelling (PLS-SEM) method was used for data analysis. This paper reveals that all organizational controls significantly influenced cost estimation performance dimensions, except for one relationship. Additionally, only three moderating effects were found to be significant. These results highlight the importance of effective organizational controls in achieving better cost estimation performance across various levels of project complexity. By implementing the right control modes, organizations can improve their cost estimation performance and enhance project success.

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Introduction

The construction industry is an essential sector that contributes economically and socially to any country, and the success of construction projects depends on an effective cost estimation performance (Elmousalami 2020). Cost estimation involves forecasting the anticipated expenses required for executing tasks according to project scopes. Cost estimation is also a critical element in the early stages of construction projects. The performance of cost estimation plays a fundamental role in the success of construction projects, as it significantly affects the project's overall cost performance (Aljohani et al. 2017). However, many construction projects have failed to be completed successfully, especially within budget. According to Amini et al. (2022), over 50% and 63% of cost overruns in construction projects occurred in the public and private sectors respectively. Globally, 28% of project failures were due to poor cost estimation performance (Project Management Institute 2018).

Previous literature on cost estimation performance has primarily focused on cost estimation methods, factors, and best practices (Fazil et al. 2021). The authors found that the poor performance of cost estimation was mainly due to inadequate cost estimation performance at the individual level. Several studies have addressed this issue by exploring the impact of stress and competency levels on cost estimation performance (Oke and Timothy 2010; Leung et al. 2016). However, the performance construct has predominantly emphasized the technical perspective while often overlooking the interpersonal perspective in the construction cost estimation context.

Currently, organizational factors such as organizational culture and leadership have been found to impact cost estimation performance in construction projects (Fellows et al. 2003; Olanipekun et al. 2013). According to Liu and Zhu (2007), the performance of cost estimators can be improved through organizational control from both technical and interpersonal perspectives. Therefore, organizational control might fill the research gap mentioned earlier.

In the construction industry, project complexity is critical in shaping the landscape of project cost practices and outcomes. Project complexity has been utilized as an independent variable in evaluating various aspects of cost performance within construction projects (Safapour et al. 2023). Furthermore, Liu (2015) revealed the significance of complexity as a moderator in the relationship between organizational control and project performance. This finding is supported by Giannoccaro et al. (2018), who uncovered a crucial moderating effect of project complexity on the relationship between controls and performance. This study introduced project complexity as a moderator in this study because of mixed findings regarding the relationship between control and performance (Liu 2015).

This research aims to determine (1) the relationship between organizational control and cost estimation performance in construction projects and (2) the moderating effects of project complexity in this relationship. This research contributes critically and originally to the construction cost estimation research area, as it addresses research gaps and develops a holistic understanding to improve cost estimation performance, which is critical to project success. Several studies have indicated that cost estimation performance is essential for completing construction